

REMARKS

It has been noted that the amended claims that were placed in the application of the Article 34 amendment, filed with the original application, were not considered in the present Office Action. The present Amendment reflects the Article 34 Amendment revision of the specification and the claims. The specification was also amended in the Article 34 Amendment to inter alia, correct the range of density from "1.2 to 2.3" to --1.2 to 1.6--, based on the disclosure in Table 6, at page 34 of the specification, of densities of "1.22 - 1.59". This Amendment inserts into the pending application the Rule 34 Amendments that were filed with the Section 371 request. That Amendment adopts the exact ranges from Table 6 of the original specification and it is not new matter. In addition, the Rule 34 Amendment corrects the error in the translation which resulted in the range of --39 to 50 hydrogen atomic %--as being shown as 16 to 52 hydrogen atomic %. A copy of a portion of the original Japanese priority document is attached to this Amendment to provide the basis for the amendment.

The Examiner's comments in paragraph 1 of the Office Action have been noted. The claims have been revised to clarify the use of carbon source gas in the apparatus claims and the locations of the sections of the containers have been inserted into the claims where necessary to provide a proper antecedent basis for the use of these terms in the claims. The term "degassing unit" has been replaced with --vacuum unit-- to adopt the more commonly used term.

In response to the objection set forth in paragraph 2, a new drawing with English language translations of the Japanese terms is attached to this Amendment.

In paragraph 3 of the Office Action, claims 1-3 and 7-8 were rejected under 35 U.S.C. §112, second paragraph for failing to particularly point out and distinctly claim the

subject matter that the applicant regards as the invention.

Reconsideration is requested.

Claim 1 has been amended to improve the clarity of the claim. The Examiner pointed to the language which located the first outer electrode along the bottom of the container. The description in Fig. 2 demonstrates that the bottom of the container is a zone located at the lower part of the container. The term bottom is not used to describe the lowest portion of the container that is in contact with a support surface. This is evident from a review of the drawings and specification and for this reason, it is requested that this ground of rejection be withdrawn.

The Examiner's comments in paragraph 4 of the Office Action have been duly noted. In paragraph 5 of the Office Action, the Examiner pointed out that it was presumed that the subject matter was commonly owned at the time any inventions were made with regard to the applicability of 35 U.S.C. §103(c). The presently claimed invention was not made in the United States and there has been no interference proceeding. For this reason, the statutory provisions cited by the Examiner are not applicable.

In paragraph 6 of the Office Action, claims 1 and 3-4 were rejected under 35 U.S.C. §102(b) or (c) as being anticipated by Shimamura (884). In paragraph 9 of the Office Action, claims 1-4, 6-9 and 11 were rejected under 35 U.S.C. §102(b) or (c) as being anticipated by Shimamura (WO98/37259). In paragraph 10 of the Office Action, claims 1-4, 6-9 and 11 were rejected under 35 U.S.C. §103(a) as being anticipated by Shimamura (PCT/US).

Reconsideration is requested.

The Shimamura Japanese patent is equivalent to U.S. 6,294,226 and WO98/37259 which have been cited by the Examiner and the applicants have no objection to utilizing the text of U.S. 6,294,226 as a translation of the Japanese text. The amendments to the claims make it clear that high-frequency power is only applied at the bottom of the container and that this is a characteristic of the claimed apparatus and method.

The use of capacitive coupling makes it possible to impart high-frequency power to some but not all of the electrodes. New claims 20 and 21 point out that high frequency power is imparted to outer electrodes as disclosed in the specification at page 17, line 16 to page 18, line 7. New claim 22 points out an apparatus according to the invention where the insulator is arranged between each outer electrode to have a thickness that allows high-frequency power to be transmitted to each outer electrode by capacitive coupling as described in the specification at page 17, line 16 to page 18, line 7 and page 20, line 22 to page 21, line 7.

In the device disclosed in the Shimamura patent, it is necessary to apply high-frequency power to every outer electrode. There is no disclosure of the use of capacitive coupling to impart high-frequency power to the other electrodes. The present invention, as defined by the amended claims, requires only one source of high-frequency power. In addition, film formation requires the same time as is required when an apparatus with an undivided outer electrode is used for DLC film formation. When Shimamura uses a single high-frequency power source, the time required with the Shimamura to form a DLC film is much longer than is required with the claimed apparatus because it is necessary to switch from one electrode to another if plural sources of high-frequency power are not provided.

Shimamura is primarily concerned with the prevention of the formation of uneven films as a result of different distances between an inner electrode and the inner surface of the container. A primary object of the present invention is to provide coatings at the bottom of a container that provide better gas barrier properties and this concept is not found in the Shimamura patent. There is no mention in Shimamura of the technique of using capacitive coupling to provide power to the second outer electrode by capacitive coupling. For these reason, it is requested that this ground of rejection be withdrawn.

In paragraph 11 of the Office Action, claims 12-19 were

rejected under 35 U.S.C. §102(b) as being clearly anticipated by Tomaswick et al. (Tomaswick).

Reconsideration is requested.

The Tomaswick reference is concerned with a DLC film which has a film thickness of 5-2000Å, hydrogen concentration of 20 - 40 atomic % and a density of 1.7 - 1.8g/cm³. This does not anticipate the amended claims which point out the novel DLC film of this invention because the claimed density of the applicants' film is 1.22 to 1.59 g/cm³. For this reason, it is requested that claims 15, 19, 24 and 25 be favorably considered.

The advantage that is provided by a lower density DLC film as provided by the present invention is that it provides a film that flexes with the expansion and contraction of a PET bottle that takes place when a carbonated beverage expands during storage in a PET bottle. Blow molded PET bottles tend to have complicated shapes which may be coated with the DLC film according to the present invention, to form a gas barrier which is stable and resistant to cracking.

The hydrogen concentration affects hardness and the gas barrier properties of DLC. Density is affected by apparent density as well and the hydrogen concentration. The apparent density is different as between films having voids and films having no voids when they have the same hydrogen concentration. Because of the apparent density, two films having the same hydrogen concentrations may have different densities. For these reasons, the defined difference in densities cannot be urged to be an obvious difference because it defines a material having different properties that are not suggested by the prior art.

An early and favorable action is earnestly solicited.

Respectfully submitted,



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